Army Instructors to Army Facilitators – Practical Considerations

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ABSTRACT

With the change from an instructor-centric to a learner-centric pedagogical model, the role of the Army instructor must also change from one of transmitting knowledge to learners to one of facilitating learners' acquisition of knowledge through problem-solving events. To support this role change, the Army must also institute changes in the processes for identifying, selecting, and preparing instructors. This paper summarizes recent work addressing Army issues in these processes and also addresses issues associated with integrating instruction in problem-based learning methods into Army instructor preparation.

KEYWORDS: developing expert facilitators; outcome-oriented instructional strategies

1. INTRODUCTION

With a goal of aligning Army institutional training and education both with the COE and with emerging best practices in learning science and technology, TRADOC is re-issuing TR 350-70 and its associated pamphlets. The new TR 350-70 pamphlet series [1] posits a continuum of learning, ranging from instruction in procedural tasks , defined as training, to instruction in broader leader development topics, defined as education. Additionally, the pamphlet aligns explicit part-to-whole methods of *direct instruction* (DI) with training and constructivist whole-to-part *problem-centered instruction* (PCI) with education. Within the context of this paper, PCI includes methods such as problem-based learning, action learning, inquiry based learning, a time for telling, experiential learning, and case based learning.

Furthermore, ALC 2015 [2] envisions a transformation of "classroom experiences into collaborative problem solving events led by facilitators (vice instructors) who engage learners to think and understand the relevance and context of what they learn (p. 35)." With this transformation of the classroom, there is to be a concomitant transformation of instructors.

However, most current Army instructor certification courses address DI methods and do not directly address PCI methods. While under DI the instructor leads students in the structured learning of some well-defined part of a knowledge domain, under PCI the instructor acts more as a guide to students as they apply higher levels of cognitive processing to develop problem solutions.

Acting as a guide implies the Instructor must be willing and able to allow the students to assume a great deal of the responsibility for the direction that learning may take. Ertmer *et al*. [3] suggest that the effective PCI instructor must be able to

- Develop good problems and questions
- Anticipate learners' questions and learning needs
- Deal with the complexity inherent in real-world problems
- Make appropriate resources available
- Manage small groups
- Let learners be responsible for their own learning
- Integrate learners with different capabilities into PCI

These are all worthy, learner-centered goals, but not easy to achieve, especially without specialized training for the PCI instructor.

The current standard Army Basic Instructor Course (ABIC) and Small Group Instructor Training Course (SGITC) for the most part do not cover PCI methods or considerations. In an approach to characterizing this gap,

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14. ABSTRACT

With the change from an instructor-centric to a learnercentric pedagogical model, the role of the Army instructor must also change from one of transmitting knowledge to learners to one of facilitating learners? acquisition of knowledge through problem-solving events. To support this role change, the Army must also institute changes in the processes for identifying, selecting, and preparing instructors. This paper summarizes recent work addressing Army issues in these processes and also addresses issues associated with integrating instruction in problem-based learning methods into Army instructor preparation.

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the Army Research Institute Ft. Benning Research Unit investigated three considerations involved in incorporating PCI methodologies into instructor preparation: desirable instructor characteristics, requisite instructor competencies, and the Army training environment [4].

This paper gives a high-level generic overview of PCI and then an updated summary of the major findings in each of the three areas of practical consideration.

2. PROBLEM-CENTERED INSTRUCTION

Classic PCI is an instructional method in which solving problems is used as a vehicle for acquiring knowledge, improving problem-solving skill, and stimulating collaborative learning [5]. It involves realistic, multidisciplinary problems that do not have a single correct answer and that require the input from multiple subject domains for solution [5],[6]. PCI models generally posit that (1) knowledge is constructed through personal interaction with specific conditions, (2) learning is triggered through contending with problematic events, and (3) knowledge is constructed in a social context [6].

The problem is central to PCI methods. Initially the learners are provided only the problem conditions and given access to information relative to constructing a solution to the problem. Within this environment, the learners are faced with "making sense" of the situation or discovering solutions. As result of this increased cognitive activity, the learners gain a deeper, more elaborated understanding of the problem area.

Within this context, the instructor's role changes from one of direct instruction to one of at best indirect monitoring and facilitating of the learner's progress. Most notably, the instructor's role turns from being a source of knowledge to being a pointer to knowledge. For example, a learner's request for a specific piece of information might be answered not with the information, but with a pointer to where the information might be found. In general, the learners are to settle upon a suitable solution on their own, without direct input from the instructor *cum* facilitator.

However, this is not to say that the learners progress entirely on their own. The facilitator provides *ad hoc* "scaffolding," such as hints, worked examples, or problem decomposition, that serves to subtly guide the learners toward an acceptable problem solution.

Given the mostly top-down structure of the Army environment (including Army training), it is clear that, to effectively use PCI, an Army facilitator must have

characteristics and competencies different from those of most current Army instructors.

3. INSTRUCTOR CHARACTERISTICS

Required instructor characteristics are those properties of the instructor that influence his or her readiness to adopt PCI as an instructional method. These characteristics are either relatively stable characteristics of a person, such as traits, or they change or are acquired slowly over time, but in either case, they are more suitable as targets for instructor selection than for instructor training.

3.1. Domain Knowledge

There are two interconnected kinds of knowledge necessary for successful employment of PCI methods: knowledge of the subject matter to be learned by the students and knowledge of the PCI methods themselves.

Subject matter knowledge is critical because the students to a great extent determine the direction a class may take, and the facilitator cannot rely upon a comfortable scripted presentation but must be prepared to address whatever unscripted issues may arise . These two domains are said to be "interconnected" in that not only must the facilitator master both domains but must also understand the subject domain from a teaching perspective to enable him to model how learners come to understand the domain [7].

3.2. Personal Educational Philosophy

The personal philosophy or set of personal beliefs a facilitator may have toward PCI-related areas can have a large impact on that facilitator's effectiveness [8]. The beliefs and attitudes the facilitator has toward the nature of the subject domain, the teaching and learning process, and student-centered learning are all important characteristics.

 -- The successful PCI facilitator views the subject domain as continuously evolving [8]. To the extent he sees the domain as constantly changing, the facilitator is motivated toward attaining higher-order cognitive skill and lifelong learning orientation as learning objectives. Also, to the extent the facilitator sees the domain as changing, he will be open to changing and updating instructional technique.

 -- The successful PCI facilitator views teaching not as a process of transmitting knowledge to students but as a process of facilitating students in their successful construction of personal knowledge. In practice, this requires a surrender of much of the direct control of learning to the students and also a dedication to not

providing students the solutions to their problems, but assisting them in constructing solutions to their problems.

-- The successful PCI facilitator views learning not as merely the accumulation of facts and set procedures, but as the construction of personal actionable knowledge. That is, the learning process is the process of cognitively assimilating and making personal sense of the to-be-learned material and of reconciling it with existing personal knowledge.

-- The successful PCI facilitator believes that students are largely responsible for and capable of guiding their own learning [9]. These convictions allow facilitators to release direct control of the classroom, to give their students a chance to struggle with the learning material on their own, to provide a variety of opportunities for students to learn in their own fashion, and to be responsive to student feedback regarding what they already know and need to improve.

In addition to these beliefs and attitudes, the successful PCI facilitator should have personal traits that enable them to guide classroom activity via indirect methods, to engage in continuous, collaborative learning with students and peers, and to weather pushback from others with differing perspectives on teaching, learning, and students. Such traits include tolerance for ambiguity, low need for control, and openness to experience [10].

4. INSTRUCTOR COMPETENCIES

Required instructor competencies for PCI therefore are those functions that a student-centered learning facilitator must perform to simultaneously provide structure and adaptively respond to student need. These competencies fall into two categories: classroom management and learning facilitation. They support indirect shaping of the classroom by promoting assessment, comprehension, and response to student need.

4.1 Classroom Management

Classroom management activities set the stage for productive problem-based learning by requiring the instructor to prioritize learning objectives, to structure problems and assessment activities, and to anticipate most likely or most damaging areas (to future learning) of student difficulty. Facilitator competencies associated with effective classroom management include specifying outcomes, developing problems, and constructing a problem road map.

Outcomes are the knowledge and skill acquisition objectives for a problem-based course. Specifying

outcomes is necessary to organize the course and to ensure that the problems used to situate learning serve a valid, applicable instructional purpose. Specifying outcomes assists instructors in developing problems and prioritizing instructional tasks by making explicit what purpose these activities serve.

The facilitator must be able to develop problems to trigger and situate the learning process. Ideally these problems are ill-defined, interdisciplinary, complex, and realistic—representative of problems typically encountered in the operational or transfer environment [5]. To promote the active involvement of all students, problems must feature interdependent roles for each member of the collaborative-learning group, and problem-solving products must require individual accountability [11]. The collaboration requirements of a problem should be representative of the transfer environment such that learner roles and the nature of their interdependence is realistic [12]. Problems must be solvable within the time constraints of the course, presenting a level of complexity that can be addressed with the resources available to learners [13]. It can be helpful to develop a series of problems ranging in difficulty and complexity such that learners can be sufficiently challenged without being overwhelmed [11]. Most importantly, the problems must address the outcomes of the course as mentioned above [13]. Problem solving must be cast such as to require students to acquire the knowledge that they must possess at the end of the course.

Constructing a problem road map provides structure that guides the assessment and understanding of students' progress. Road map construction comprises:

- Developing advanced organizers for the course, including an up-front introduction of the problem-based learning process and expectations of students [14]
- Specifying assessment milestones and student-centered evaluation criteria [11],[14]
- Specifying situations for which direct or other instructional techniques might be needed [11]

In general, instructors should require student products at multiple phases of the problem-solving process, including identification of the problem, planning the problem-solving approach, addressing knowledge gaps, synthesizing information, and reaching a final solution.

4.2 Learning Facilitation

Learning facilitation is what facilitators do in real time to ensure that students remain active and in charge of their

learning and that learning stays on track to meet course requirements and outcomes.

Monitoring student progress is an essential competency of PCI instruction. Facilitators monitor student activity via formal and informal assessment. Informal assessment includes observation of ongoing classroom events or actively questioning students about their thinking during the problem-solving process [15]. To determine whether or how to intervene, it is believed that instructors compare their informal assessments against a situated model of how problem-solving should be conducted [7]. Instructors may intervene to facilitate learning via providing direct instruction [16], asking questions that challenge learners' assumptions and make faulty thinking explicit [15], drawing students' attention to outside resources that can be used to solve the problem [14], and introducing simpler, practice problems [11].

Role-modeling the problem-solving process is essential for students to understand what is expected of them regarding how to solve problems and how to learn from the struggle with complicated situations [15]. In addition to using a problem road map and formal assessment opportunities to structure group activity, instructors can role-model the problem solving process by making students' thinking and depth of understanding explicit at various stages of the problem-solving process [9]. Methods for making thinking and knowledge explicit include open-ended questioning that pushes for assumptions and explanations, assisting in the development of a public record of progress (e.g., shared visualizations), and making one's own knowledge gaps public as well as the process for bridging them [9].

Instructors must facilitate group discussion and collaboration in order to support knowledge acquisition and give students a model of successful collective problem solving [17]. To do so, instructors must perceive when disagreement among group members is intractable or, conversely, when agreement has been reached prematurely or is factually wrong [18]. Instructors must also detect when member contributions are out of balance and engage the less active learners. Questions used to facilitate discussion should be open-ended and instructors should give students time to respond instead of jumping in with an answer [19].

5. ARMY TRAINING ENVIRONMENT FOR PCI

The Army's success in implementing PCI will depend in part on the correspondence between the requirements of PCI and the characteristics of Army instructors, which are shaped by selection practices. This section presents qualitative findings from interviews and focus groups with Army education providers, which illuminate the differences between the current Army learning environment and one that is ideal for PCI. Army instructor selection processes are addressed first, due to their implications for instructor characteristics.

5.1 Instructor Selection

Army instructor selection is not a standardized process in terms of selection criteria or application. The Army currently has no policy regarding instructor selection and no formal selection process. The Army instructor cadre, which comprises military personnel and civilians (government employees or contractors, typically retired military), largely is a product of nominations and contract awards. Nominations of military personnel may be a function of (1) subject matter expertise; (2) availability; or (3) unsuitability for an operational duty position. Contract awards to civilian instructors may be a function of (1) subject matter expertise; and/or (2) contract cost. To the extent that subject matter expertise is evaluated, the available measures (e.g., evaluation reports, course completion, prior service) may be subject to the same validity concerns as those used to reflect civilian teachers' domain knowledge. Perhaps most importantly, the demand for qualified Army instructors outstrips the available supply, so there is a greater need to develop personnel quickly than there is to select them.

The selection methods described in the previous section could be applied after being modified for both content validity and feasibility purposes. A chief concern is ensuring that assessments of instructor characteristics be (1) matched to the demands of the teaching position; and (2) applied rigorously. For instance, not all teaching positions may require student-centered teaching methods, in which case, subject matter knowledge may matter more than some interpersonal skills. Scores on assessments of belief should be used differently, depending on whether student- or teacher-centered beliefs are more aligned with a particular learning environment. Selection measures must be applied consistently and scores documented so that a database can be created to allow quantitative analysis of instructor characteristic-teaching performance links.

5.2 Instructor Characteristics

To the extent that they are a representative sample of the civilian population, there is no reason to believe that Army instructors differ from civilian educators in terms of basic characteristics. Many Army instructors are, in fact, civilians. Regardless, Army instructor and civilian teacher beliefs have been shaped by similar kindergarten through

12th grade (K-12) and college education experiences. In addition, the two populations are unlikely to differ in terms of the basic personality traits associated with student-centered learning. They also have had similar opportunities to develop problem-solving skills and productive work habits as adults. For these reasons, and on the basis of discussions with Army education providers, it seems safe to conclude that, on average, Army instructors resemble civilian educators with regard to subject matter expertise, education-related beliefs, personality, work habits, and problem-solving capability.

Unfortunately, the characteristics of both Army and civilian educators generally are inconsistent with the requirements of student-centered learning or PCI [20]. In general, civilian education (including college undergraduate instruction) been dominated by traditional, teacher-centered instructional methods, producing (1) concepts of subject matter as a static body of facts; (2) philosophies of teaching as knowledge transmission; (3) expectations for students to be passive participants in the learning process; and (4) greater familiarity and comfort with controlled teaching techniques. Because beliefs have been shown to be very difficult to change, one implication of the similarity between Army instructors and civilian educators is that the Army will encounter similar challenges implementing student-centered teaching and PCI. In addition, changes in the nature of warfare and in the operational environment decrease the likelihood that any one instructor will have comprehensive subject matter expertise. As the operational tempo remains high, Army instructors face significant challenges keeping their domain knowledge current and relevant.

One important difference between Army instructors and civilian educators also has implications for Army implementation of PCI. For most Army instructors, teaching positions last a relatively short time, 2-3 years, and are not always seen as an opportunity for professional advancement, Anecdotally, being nominated for an instructor position is seen by some Army personnel as a bad sign regarding career prospects. Yet, seeing teaching as a prestigious, chosen profession worthy of continuous learning is necessary for Army instructors to make the investment in student-centered learning

5.3 Instructor Development

As educational leaders at Army schoolhouses have recognized the importance of student-centered learning for enhancing Soldiers' readiness, they have developed their own approaches to preparing instructors to facilitate it [21]. Where applicable, these grassroots efforts have modified or augmented the ABIC to include instruction on particular advanced methods, including (but not limited to) outcomes-based instruction, the Adaptive

Leader Methodology, and problem-based learning. Some institutions, such as CGSC and the Army Management Staff College (AMSC), have their own faculty preparation programs focused on implementing experiential and inquiry-based learning, respectively.

In general, the duration of Army instructor development is shorter than recommended and there is limited opportunity for instructors to sustain their skills via social reinforcement and learning. High operational tempo requires Army schoolhouses to produce many instructors quickly. Initial preparation typically is very short-term in nature, lasting approximately one to two weeks before an instructor begins teaching independently. In addition, instructor tenures usually are short (2-3 years), precluding self-identification as a professional educator and advanced development as such. To meet high throughput demands, most of an instructor's time is spent in the classroom, so it can be difficult to find time for continued professional development even when it is desired. However, there exist opportunities for activity-based continued development, including attending a small-group instructors' course or a 2-3 day workshop on advanced methods (e.g., Connolly, 2008). Social learning methods that promote continuous development are applied at the discretion of instructor cadres and are subject to time and personnel constraints.

The alignment of external standards with instructor preparation objectives is accomplished by close coordination between policy makers and implementers. Coordination with policy makers ensures that instructors are prepared to teach in a way that meets organizational expectations and, by extension, that a reward structure is in place to promote the sustainment of desired practices. In the Army, curriculum development and implementation roles often are distributed across organizations (CGSC and the Army Management Staff College excepted). Curriculum materials usually are not created by instructors; thus two different types of implementer must coordinate with policy makers: course developers and instructors. Course developers must produce curriculum materials that both meet policy standards and the criteria for effective, student-centered classroom management described earlier in this report, including problem development. In addition, the programs of instruction designed by course developers are used by Army quality assurance officers to evaluate instructor performance. The assessment criteria they use must be aligned with policy, programs of instruction, and instructor development objectives. Aligning instructor preparation with policy therefore requires that three groups of people with different reporting structures all receive preparation in student-centered learning methods.

6. CONCLUSIONS

As outlined in the *Army Learning Concept for 2015* [2], preparing Soldiers to learn from problem-solving experiences requires that Army instructional practices become more responsive to individual student need, better attuned to operational requirements, and more representative of social learning contexts.

Implementing student-centered instruction, including PCI, requires that Army instructors possess the same characteristics that experts in the complex, continuously evolving field of military operations have. These characteristics include domain knowledge, problem-solving skill, conscientious work habits, and beliefs and personality traits that promote lifelong learning and developing others. Instructor development must grow the classroom management and facilitation competencies that enable instructors to indirectly shape classroom events and respond adaptively to student need. These competencies include organizing and role-modeling problem solving as well as facilitating discussion and collaborative learning. Preparing instructors to facilitate student-centered learning is difficult, and after decades of effort, wide-ranging success remains elusive in civilian learning environments.

The current Army environment partially supports instructor professional development and the successful implementation of student-centered learning. The current pool of instructor candidates is much smaller than the number of positions available and rigorous selection methods remain to be developed. For these reasons, professional development opportunities other than selection may be the best option for shaping the instructor cadre.

To promote PCI within the time, personnel, and resource constraints of the current Army environment, basic instructor preparation should be more outcomes-based and student-centered. Methods must be created that can rapidly develop instructors' actionable knowledge for teaching and leverage extant methods used by Army educators. An accelerated apprenticeship model could reduce time to effectiveness in the classroom and would support the continuous professional development of current instructors. Although not expected to exceed current instructor professional development costs, the resource requirements to implement the accelerated apprenticeship model are unknown. Moreover, the extensive use of activity-based development methods for deliberate practice would require the identification and participation of a limited number of expert instructors to develop instructional materials.

Future research that can support the successful, lasting implementation of the Army Learning Concept must include an in-depth investigation of the required resources to execute comprehensive educational reform for instructors as well as the likely return on investment in changing Army institutional education.

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